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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application: Hays, Jr., et al.
Serial No.: 10/079,692
Filed: 02/20/2002
Group Art Unit: 3683
Examiner: Kramer, Devon C.
For: NON-METALLIC BRAKE PLATE

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 CFR 1.131

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GROUP 300

I, Robert W. Stewart, declare the following:

1. I am an inventor on this application.
2. Our invention was reduced to practice at least as early as May 1996.
3. Exhibit A attached to this declaration is a copy of an Activity Report

prepared by my co-inventor, Dan Donnell. As indicated under the heading "Product Development & Innovation," at least one sample of a composite backplate (i.e., a non-metallic brake plate) that embodied our invention was tested at least as early as May 1996.

4. Exhibit B attached to this Declaration is a copy of an internal company memo and photographs regarding completed prototypes embodying our invention. My co-inventor, William Hays authored that memo dated March 9, 2000. The photographs

attached to that memo show labels on the sample brake shoe assemblies that are dated August 1996. That date is accurate regarding the timeframe when the photographed sample shoe and lining assemblies were tested as described in the Exhibit B memo.

5. I declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I acknowledge that any willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. §1001) and may jeopardize the validity of the application or any patent issuing thereon.

Robert W. Stewart
Robert W. Stewart
Dated: 30-July-2003

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EXHIBIT A

ACTIVITY REPORT

MAY 1996

DAN DONNELL

COMPETITION

Knorr Service Lining: Four cavity prototype tool complete. Sixty used Knorr plates prepped and ready for molding. Hundred or so more that have not been prepped. Field test pending Gate 1 review.

QUALITY

Air Disc Adhesive: Still have not found suitable replacement for the 655 film adhesive. The liquid 655 and the liquid adhesive used by PMI (Cytec) looks promising, although full battery of tests not complete.

CUSTOMER SATISFACTION

Clark Mat' Handling: Per customers request 80 additional oil soaked aircraft style linings made for prototype trucks. Initial production targeted for June. Ref SR#96

Martin Marietta: Tool to make friction plates for new 1500 HP Challenger transmission have been received. Should be ready to mold next week. The round pucks that go with this transmission have been molded and will be baked tonight and ready for grind tomorrow. Ref SR#67

Troy Engineering: European Air Disc samples in EBL-834 (10 pcs) will ship 5/29/96. The balance of samples to made in EBL-889. Ref SR#94,95

Dunlop Aviation: Preliminary quote sent to Dunlop 5/8/96 for parts AH090973,4. Info given to Roger Galliazzo on 5/29/96 for detailed quote.

FINANCIAL PERFORMANCE

Flash Mold Conversion: Tool drawings for conversion feasibility of non-plate positive mold linings complete, pending my design approval. Should be ready to submit for quotes by next week.

PRODUCT DEVELOPMENT & INNOVATION

Composite Backplate: Initial test of the composite plate showed promise. The plate made it through the Volvo wear test cycle (3500 stops at diff temps) without any signs of failure. Will run another test and record lining wear data. Also have requested a lower cost compound with lower mechanical properties to test.

HUMAN RESOURCES AND GOVERNMENT RELATIONS

GENERAL

Field Tests: VME L160 front loader due for inspection in June. Currently is running Flash Molded EBL-711 with Phenolic Pistons.

EXHIBIT B

03/09/2000 11:06 AM



William D Hays

To: Larry W Bowman/Amer/Auto@Auto, Patents/Amer/Auto@Auto
cc: Daniel M Donnell/Amer/Auto@Auto
Subject: Pictures of Composite Shoe, Invention Disclosure Docket #00MRA0224

Larry,

In answer to your question regarding whether the composite shoe plate design has sufficient compressive strength to withstand the stresses associated with braking, I have attached photographs of a set of shoe and lining assemblies that were fabricated with a fiber reinforced composite material for the shoe plate and dynamometer tested on our SCL-2 brake. The dyno test was run at the following test conditions: 1900 slug-ft² inertia, 27.4" rolling radius, 7.5" effective brake radius.

A total of 4200 applications were performed, alternating forward and reverse directions from approximately 19 MPH and 6 ft./sec² deceleration. Initial brake temperatures spanned the temperature range of 158F to 842F. Approximately 50% of the lining was worn off during this test. The pictures show the composite shoe plate suffered no significant damage during this test.



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